



Attorney's Docket No.: 08935-282001 / M-5013

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : William Bowden et al.  
Serial No. : 10/648,801  
Filed : August 27, 2003  
Title : PRIMARY LITHIUM BATTERY

Art Unit : 1745  
Examiner : Raymond Alejandro  
Conf. No. : 3936

**Mail Stop Appeal Brief - Patents**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**BRIEF ON APPEAL**

Applicants are appealing the final rejection of claim 25 to the office action dated August 24, 2006. Applicants request that the rejection be reversed. A Notice of Appeal was filed on October 18, 2006.

**(1) Real Party in Interest**

The real party in interest is The Gillette Company, Prudential Tower Building, Boston, MA. The Gillette Company was acquired by The Procter & Gamble Company in 2005.

**(2) Related Appeals and Interferences**

There are no related appeals or interferences.

**(3) Status of Claims**

Claim 25 is pending and stands rejected under 35 U.S.C. § 102(a) and 35 U.S.C. § 102(e).

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**(4) Status of Amendments**

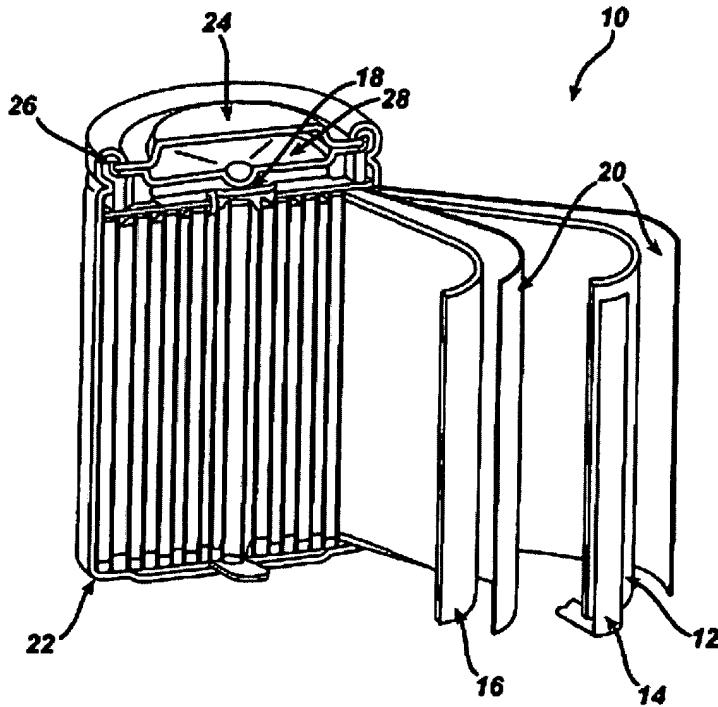
An amendment has been filed along with this brief rewriting claim 25 in independent form and canceling all other claims. Applicants will assume for purposes of this appeal that the amendment has been entered.

**(5) Summary of Claimed Subject Matter**

Claim 25 relates to a primary lithium battery. An example of the battery is shown in Figure 1:

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**FIG. 1**



Referring to Figure 1, primary lithium battery 10 includes an anode 12, a cathode 16, and a separator between anode 12 and cathode 16. See page 3, lines 22-24. The anode includes lithium. Importantly, cathode 10 includes a mixture of lithiated manganese dioxide and a carbon fluoride. The lithiated manganese dioxide is a reversible low capacity material and the carbon fluoride is an irreversible high capacity material. The manganese dioxide and the carbon fluoride are blended.

Using the combination of a reversible low capacity material (the lithiated manganese dioxide) and an irreversible high capacity material (the carbon fluoride) provides a significant benefit to the lithium battery including cathode 10. See, for example, the discussion on page 8, lines 24-32.<sup>1</sup>

For the convenience of the Board, claim 25 is provided below:

**25. A primary lithium battery comprising;**

a cathode including a mixture of a irreversible high capacity material including a carbon fluoride and a reversible low capacity material including a lithiated manganese dioxide, wherein the lithiated manganese dioxide and the carbon fluoride are blended;

an anode including lithium; and

a separator between the cathode and the anode.

**(6) Grounds of Rejection**

Claim 25 has been rejected under 35 U.S.C. § 102(a) as being anticipated by European Publication 1326295 (“EP ‘295”). Applicants request reversal of this rejection.

Claim 25 has been rejected under 35 U.S.C. § 102(e) as being anticipated by Roy et al., U.S. Publication No. 2003/0134188 (“Roy”). Applicants also request reversal of this rejection.

**(7) Argument**

Claim 25 requires a mixture, and blend, of lithiated manganese dioxide and a carbon fluoride. As applicants will discuss in more detail below, EP ‘295 and Roy disclose lithium batteries including cathodes having (multiple layers). The cathode includes a layer containing carbon fluoride and a layer containing lithium manganese dioxide ( $\text{LiMnO}_2$ ). EP ‘295 further teaches that the layer including the carbon fluoride is in physical contact with the layer including the  $\text{LiMnO}_2$ . The Examiner contends that the cathodes described by EP ‘295 and Roy include a

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<sup>1</sup>The rejections on appeal are 35 U.S.C. § 102 rejections, and applicants will not discuss these benefits further in this brief.

mixture of a carbon fluoride and LiMnO<sub>2</sub> and that the carbon fluoride and the LiMnO<sub>2</sub> are blended. Applicants disagree and as a result are pursuing this appeal.

Applicants will address EP '295 and Roy before discussing the law and explaining why the rejections should be reversed.

**(a) EP '295**

EP '295 discloses a multiple layer cathode for use in a lithium battery. The cathode is shown in Fig. 2:

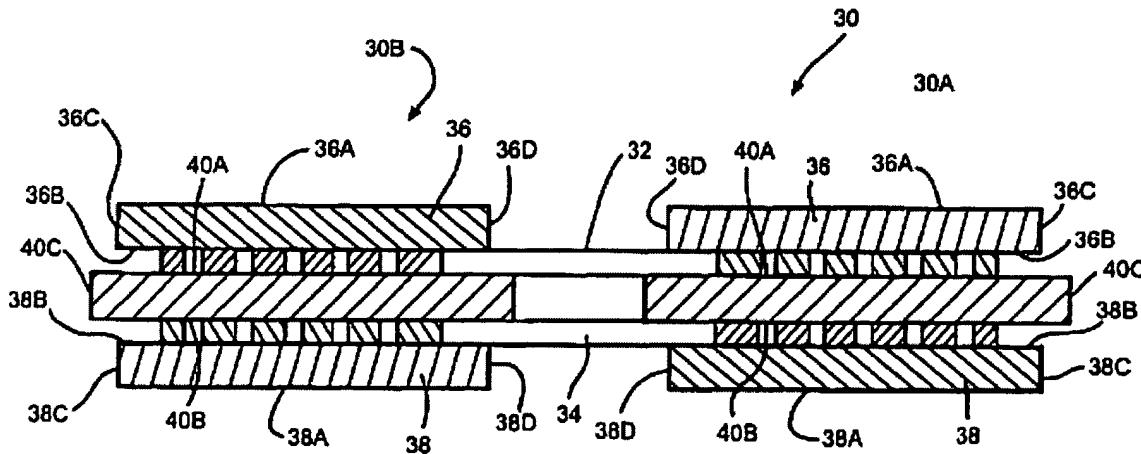
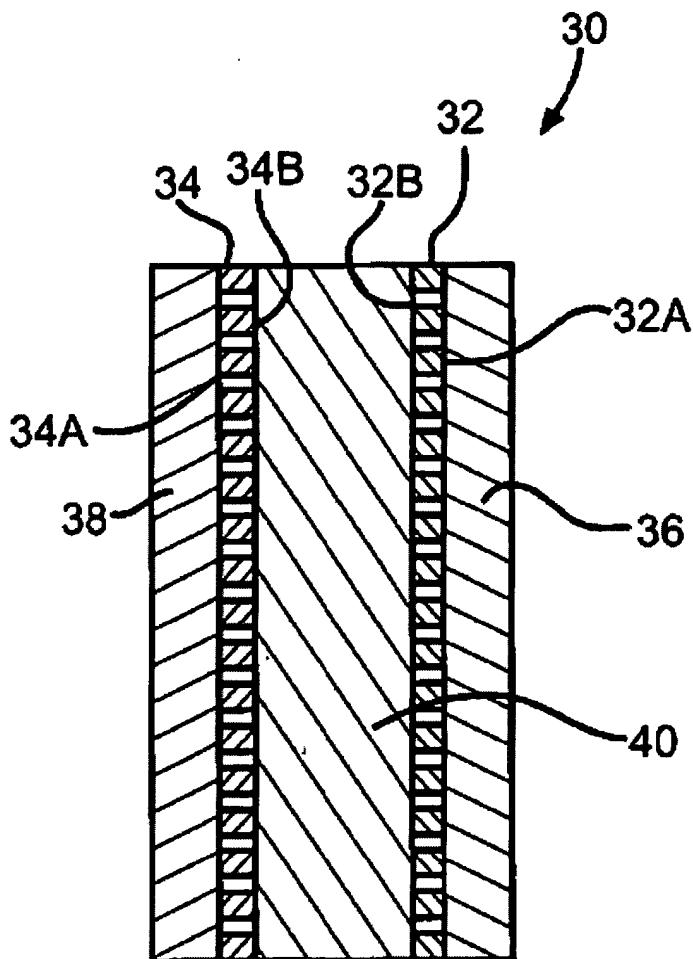


FIG. 2

Referring to Fig. 2, cathode 30 has a layer 40 (the middle layer) containing a carbon fluoride, layers 36 and 38 containing LiMnO<sub>2</sub>, and current collectors 32, 34. EP '295 indicates that layers 36 and 38 touch layer 40 beyond the ends of current collectors 32, 34 (see paragraph 30).

**(b) Roy**

Roy also discloses a multiple layer cathode for a lithium battery. The cathode is shown in Fig. 2:



—FIG. 2

Referring to Fig. 2, cathode 30 has a layer 40 containing a carbon fluoride, layers 36 and 38 containing LiMnO<sub>2</sub>, and current collectors 32 and 34.

(c) Legal Standards

A claim is invalid for anticipation under 35 U.S.C. § 102 if a prior art reference expressly or inherently discloses a product including every limitation required by the claim. See Schering Corp. v. Geneva Pharmaceuticals, 339 F.3d 1373, 1379 (Fed. Cir. 2003); and EMI Group v. Cypress Semiconductor, 268 F.3d 1342, 1350 (Fed. Cir. 2001). A prior art reference expressly

discloses a product covered by a claim if the reference explicitly mentions every limitation of the claim. A prior art reference that does not explicitly mention one or more limitations required by the claim nonetheless discloses a product covered by the claim if the "natural result flowing from" the explicit disclosure of the reference is a product including every limitation required by the claim See Schering Corp., 339 F.3d at 1379; and Eli Lilly & Co. v. Barr Labs., 251 F.3d 955, 970 (Fed. Cir. 2001).

**(d) The 35 U.S.C. § 102(a) Rejection Based on EP '295 Should Be Reversed**

The sandwich cathode described in EP '295 includes a layer containing carbon fluoride and a layer containing LiMnO<sub>2</sub>. The layers have a current collector between them, but also have portions in direct physical contact. However, EP '295 does not teach a structure in which the carbon fluoride and the LiMnO<sub>2</sub> are part of a mixture, and certainly does not teach a structure in which the carbon fluoride and the LiMnO<sub>2</sub> are blended.

The Examiner contends that the layer containing carbon fluoride and the layer containing LiMnO<sub>2</sub> physically touch and therefore provide a mixture at the interface. Specifically, the Examiner says (p. 13 of August 24, 2006 office action) (italics, underlining, and boldface type in original):

-the EP '295 discloses that the first and second active materials are short-circuited to each other by contacting opposite sides of a current collector (P0002, 0010); additionally, active materials 36, 38, and 40 (*representing both active materials*) touch at their peripheries beyond the current collector 32 and 34 (P0030,0036).  
*Again, such periphery touching of the active materials 36, 38 and 40 necessarily includes an interface which promotes mixing the two active materials at least at the surface.*

The contention that physical contact between a layer containing a carbon fluoride and a layer containing LiMnO<sub>2</sub> "promotes mixing", and therefore presumably inherently provides a "mixture" of the carbon fluoride and the LiMnO<sub>2</sub>, is pure speculation. EP '295 does not teach that the interface "promotes mixing" and inherently provides a mixture. The contention is mere Examiner's argument, and falls far short of meeting the legal requirements of a 35 U.S.C. § 102 rejection.

The Examiner never really attempts to explain why EP '295 describes carbon fluoride and LiMnO<sub>2</sub> that are blended. The closest explanation appears on page 6 of the August 24, 2006 office action (italics in original):

As to claim 25:

The EP '295 discloses that it is known to roll, spread or press the first and second cathode active materials together (P.0024). *Thus, they are together.*

Applicants agree that EP '295 describes a cathode including a layer containing a carbon fluoride and a layer containing LiMnO<sub>2</sub> that are "together" in the cathode. But EP '295 does not expressly or inherently disclose carbon fluoride and LiMnO<sub>2</sub> blended.

For these reasons, the 35 U.S.C. § 102(a) rejection of claim 25 based on EP '295 should be reversed.

**(e) The 35 U.S.C. § 102(e) Rejection Based on Roy Should Be Reversed**

The sandwich cathode described in Roy includes a layer containing carbon fluoride and a layer containing LiMnO<sub>2</sub>. The layers have a current collector between them. However, Roy does not teach a structure in which the carbon fluoride and the LiMnO<sub>2</sub> are part of a mixture, and certainly does not teach a structure in which the carbon fluoride and the LiMnO<sub>2</sub> are blended.

The layer containing the carbon fluoride and the layer containing the LiMnO<sub>2</sub> do not physically touch. As a result, the Examiner takes a different approach from the one taken with EP '295 to come up with a reason that the carbon fluoride and the LiMnO<sub>2</sub> are part of a mixture. Specifically, the Examiner says (p. 13, of August 24, 2006 office action) (italics, underlining, and boldface type in original):

-Roy et al disclose in paragraph 0025 and illustrate in **FIGURE 2** that current collectors 32, 34 are perforated structures having on respective sides first and second active materials (P0025/FIGURE 2). Also, disclosed is that the first and second active materials are short-circuited (P0003). *Note that during charging/discharging cycles respective active materials contact one another by contacting common electrolytic medium through the perforated structure of the current collector. Thus, it can be contended that the cathode, as a whole, or unitary structure, does encompass a mixture thereof for electrochemical purposes. Stated alternatively, Roy et al show first and second active materials that are electrochemically mixed for power generation purposes.*

Remarkably, the Examiner contends that since the layer including the carbon fluoride and the layer including the LiMnO<sub>2</sub> share the same electrolyte, they are "electrochemically mixed" and therefore are a "mixture." This is a rather expansive reading of "mixture" that is inconsistent with the use of mixture in applicants' specification. It also is inconsistent with logic; under the

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Examiner's interpretation of "mixture" any components that contact the electrolyte in a battery are part of a mixture.

As with EP '295, the Examiner never attempts to explain why Roy describes carbon fluoride and LiMnO<sub>2</sub> that are blended. The closest explanation appears on page 7 of the August 24, 2006 office action (italics in original):

As to claim 25:

Roy et al discloses that it is known to use together both first and second cathode active materials (P.0011-0012/FIGURES 1-2). *Thus, they are together.*

Once again, applicants agree that Roy describes a cathode including a layer containing a carbon fluoride and a layer including lithiated manganese dioxide that are "together" in the cathode. But Roy does not expressly or inherently disclose the carbon fluoride and LiMnO<sub>2</sub> blended.

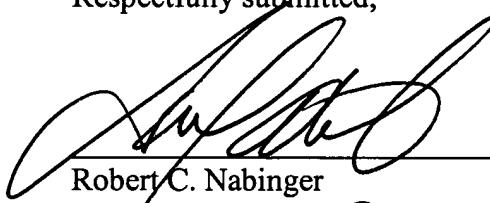
For these reasons, the 35 U.S.C. § 102(e) rejection based on Roy should be reversed.

**(8) Conclusion**

Applicants request that the 35 U.S.C. § 102(a) rejection of claim 25 based on EP '295 and the 35 U.S.C. § 102(e) rejection based on Roy be reversed.

The brief fee of \$500 is enclosed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,



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Date: November 6, 2006

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### **Appendix of Claims**

25. A primary lithium battery comprising;

a cathode including a mixture of a irreversible high capacity material including a carbon fluoride and a reversible low capacity material including a lithiated manganese dioxide, wherein the lithiated manganese dioxide and the carbon fluoride are blended;

an anode including lithium; and

a separator between the cathode and the anode.

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### **Evidence Appendix**

None.

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**Related Proceedings Appendix**

None.